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INL

University teams chosen for ATR research

Four university teams will conduct experiments at INL's Advanced Test Reactor to help advance nuclear energy research in the United States.

FOUR UNIVERSITY TEAMS have been selected to perform nuclear materials research experiments at Idaho National Laboratory's Advanced Test Reactor National Scientific User Facility. The experiments will be the first conducted by universities at the ATR, scientific director Todd Allen said on April 2.

The four teams and the experiments to be conducted at the ATR are as follows:

- University of Florida: Inert matrix ceramic fuel for destruction of plutonium and minor actinides.
- University of Illinois: Fundamental investigations of the irradiation behavior of iron-chromium alloys.
- North Carolina State University: Irradiation behavior of nanostructured metals and alloys.
- University of California at Santa Barbara: Characterization of advanced structural alloys under irradiation.

The experiments were selected from 19 proposals considered for use of the ATR. "The four experiments selected this year are only the first of many experiments from universities and industry that will be brought to our facilities in the coming years," Allen said. "The information gathered from these experiments will help advance nuclear energy research in the U.S., and help develop material science solutions to fundamentally change the way nuclear power plants are operated."

Allen

The DOE designated the ATR a national scientific user facility in April 2007 to support U.S. leadership in nuclear science and technology. By making access easier for new researchers from universities, laboratories, and industry, the ATR will support basic and applied nuclear research and development, further scientific initiatives, and help ensure the nation's energy security, according to the DOE.

Members from each university team will work with INL staff to design the experiments. Laboratory engineers will conduct safety evaluations of the experiments and

The Advanced Test Reactor facility at Idaho National Laboratory (Photos: INL)

A view of the top of the ATR

then place them in the ATR for irradiation. Once the irradiation is completed, the experiments will be removed and the team members and INL staff will conduct post-irradiation examination at INL's Hot Fuel Examination Facility. The test results will be jointly published in open scientific literature.

The ATR is a versatile fuels and materials test reactor that can subject experiments to high levels of irradiation. The reactor is able to duplicate, in weeks or months, the effects of irradiation that material would receive in years of use in a radiation environment, such as a commercial nuclear reactor.

Allen also announced that 25 university students have been selected to attend the ATR facility's summer session, to be held June 16–20. The educational session, which is intended for nuclear energy researchers interested in materials, fuels, and modeling, will serve as an introduction to the facility's capabilities, safety, and engineering and will provide an overview of other facilities at INL associated with post-irradiation analysis of experiments.

Attending the session will be two students each from Texas A&M University, the University of Florida, the University of Central Florida, the University of Michigan at Ann Arbor, and the University of Wisconsin at Madison. Universities sending one student each will be Boise State University, Ohio State University, the Georgia Institute of Technology, Iowa State University, the Massachusetts Institute of Technology, North Carolina State University, Purdue University, Rensselaer Polytechnic Institute, the University of California at Davis, the University of California at Berkeley, the University of Illinois at Urbana-Champaign, the University of Kentucky, the University of Missouri at Columbia, the University of South Carolina, and the University of Utah.

In addition to tours of the research reactor and post-irradiation examination facilities, participants will attend sessions on the basics of irradiation damage and corrosion in reactor materials, light-water reactor fuels and materials, fast reactor fuels and materials, fuel and material modeling, gas reactor fuels, fundamentals of conducting a reactor experiment, and capabilities of the user facility for irradiation testing and post-irradiation examination. NN